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# GAME INTERFACE FOR LOCATION LEARNING

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## GAME INTERFACE FOR LOCATION LEARNING

### ABSTRACT

A location learning system can be used for learning layout of a geographic location like a neighborhood, city, district, state, etc. The system provides a user with a gaming application to facilitate user learning of routes from one location to another. When the user starts the game, the system displays panoramas of a starting and a target geographic location. The system provides a user interface projectile that the user can project, throw, shoot, or launch towards the target geographic location. The system receives a gesture to project the user interface projectile from the starting location towards the target geographic location. The system calculates a landing location and a trajectory based upon values like direction, ground angle, and speed associated with the gesture. The system plays an animation along the trajectory of the projectile. The animation shows panoramas of surrounding environment of the determined trajectory. In this manner, the user can learn how various locations are situated in relation to each other.

### PROBLEM STATEMENT

With the advent of navigation applications, finding places has become quite easy. Navigation applications provide users with maps that are efficient in showing or guiding users to the target location that they wish to visit. However, users need to have a good sense of direction to understand maps. Thus, maps might not be the most helpful for users to determine where places are in relation to each other within a geographic location like a city, state, etc. Many users prefer navigating by landmarks instead of picturing a map in their head (e.g., "Turn left at the

stadium"). A location learning system is described which may be a gaming application that helps users learn the landmarks within a geographical location, and how they are positioned relative to each other.

### LOCATION LEARNING SYSTEM

The systems and techniques described in this disclosure relate to a location learning system that facilitates the learning of the geographic layout of a geographic location through an interactive gaming application. The location learning system can be implemented for use in an Internet, an intranet, or another client and server environment. The system can be implemented locally on a client device or implemented across a client device and server environment. The client device can be any electronic device, for example, a laptop, a mobile phone, a computer, a tablet, or a wearable device.

Fig. 1 illustrates an example method 100 to facilitate users to learn the geographic layout of a geographic location, e.g., a neighborhood, city, district, and state. The method 100 can be performed by a system that facilitates the learning of the geographic layout of a geographic location through an interactive gaming application, for example, the location learning system.

When a user plans to visit a city, he may want to learn the geographical layout of the city so he can better navigate and locate the places he wants to visit. The user may learn the layout of the city using a gaming application provided by the location learning system. As shown in Fig. 1, the system provides a panorama of a starting geographic location and a thumbnail panorama of a target geographic location (Block 102). The method displays the panorama on an output device, e.g., display screen, of the electronic device implementing the location learning system. The

starting location may be the user's current location or any existing landmark, e.g., famous monument, museum, mall, etc. within a city. Similarly, the target geographic location may be another location within the city, e.g., a different landmark or a place that the user wants to visit. The system may prompt the user to input the starting and target geographic locations. For example, a user visiting Australia may input starting location as "OPERA HOUSE" (a famous place in the country of Australia) and target location as "DARLING HARBOUR." Alternatively, or additionally, the system can provide the user with a list of locations via a drop down menu or other such menu to select the starting and target geographic locations. The user can provide the selection from the options provided to the user.

Alternatively, the system may detect the current geographic location of the user as the starting geographic location and choose the target geographic location from a list of stored locations. The game interface may choose the target geographic locations based on factors, for example, importance of the locations in a city, location history of the user or user's friends, distance between the locations, etc. In another implementation, the system randomly chooses both the starting and target geographic locations.

The system receives a gesture to project a user interface projectile from the starting location towards the target geographic location (Block 104). The user interface projectile may be a virtual golf ball, disc, arrow, and stick. The user inputs the gesture using an input device such as a remote control, keyboard, touch sensitive display screen, or human interface device such as a golf stick, etc. On receiving the gesture, the system determines the direction, ground angle, and speed of the projectile based on the user input. For example, the user can input the gesture by flicking the touch sensitive display screen with one or more fingers. The system can determine

the direction and ground angle of the projectile based on the direction of the flick at the display screen and the speed of the projectile based on the speed of the flick. The system may store these values temporarily at the server. Alternatively, a user interface vehicle may be used for reaching the target geographic location from the starting geographic location.

The system determines a trajectory and landing location for the projectile based on the gesture (Block 106). The trajectory of the projectile is the path that the projected projectile travels from the starting location to the landing location. Both the trajectory and the landing location are calculated using the calculated values of the direction, ground angle, and speed of the projectile. The system may determine the trajectory and landing location using a pre-stored algorithm based on the values related to the received gesture. Alternatively, the system may use a database that stores trajectories and landing locations corresponding to starting location and various gesture values, such as, direction, ground angle, and speed. In another implementation, the system may use some pre-determined assumptions and formulas to determine trajectory and landing location. For example, the trajectory is directly proportional to the angle of the projectile from the ground. As a further example, the landing location can be calculated based on the speed and the angle of the projectile. The system thus determines the trajectory and causes the projectile to travel along the determined trajectory.

The system then plays an animation of the environment surrounding the trajectory of the projectile as the projectile travels from the starting geographic location to the landing location (Block 108). The animation may be dynamically created by the system for a particular starting location and the landing location. The system displays a series of panoramas that are stored at the server. These panoramas are of the places that occur along the trajectory of the projectile.

Alternatively, the system fetches the animation from a database that stores a number of animations. The database stores these animations corresponding to the starting and landing locations. These animations may have been previously created by the system. The animation is composed of a mixture of street view imagery and aerial 3D imagery from a “first person” perspective, as if the user is flying from one location to another. The animation may also have an associated audio that plays with it. The animation illustrates various landmarks, famous places, monuments, etc. along the trajectory of the projectile that helps the user learn the route from the starting geographic location to the target geographic location. Alternatively, or additionally, the animation may have textual cues displayed on the display screen.

The system detects if the landing location is same as the target geographic location (Block 110). If the landing location is the same as the target geographic location, the system exits the gaming application (Block 112). Alternatively, the system presents another starting and target geographic location pair for the user to continue playing. However, if the landing location is not the same as the target geographic location, the user is given another projectile to project for the same target geographic location (Block 104). After a predefined number of projectiles are used by the user in trying to reach the target geographic location, the system displays “GAME OVER” and exits the application (Block 112).

The gaming application can have a number of stages with different, e.g., low to high, difficulty levels. The first stage is of the lowest difficulty level and gets progressively more difficult as the stages increase. The stages have fixed number of starting and target geographic location panoramas. The system allows the user to progress to the next stage only when the user successfully lands a projectile at each of the target geographic locations of a particular stage.

Alternatively, the system progresses stages when the user has credits above a certain predefined number. Credits are granted to the user each time the user successfully lands the projectile at the target geographic location. The number of credits granted when the projectile reaches the target geographic location depends upon the number of projectiles used by the user for landing at the target geographic location. The lesser the number of projectiles used, higher the number of credits earned by the user. At each stage, the user earns certain number of credits. For example, the maximum number of projectile that can be used for finishing a starting and target geographic location pair may be 5 projectiles and maximum number of credits that can be earned may be 10 credits. If the user uses only 1 projectile for landing at the target geographic location, the user earns 10 credits. If the user uses 2 projectiles for landing at the target geographic location, the user earns 8 credits and so on. These credits are carried over to the progressing stages. Thus, if at a particular stage the user finishes using 5 projectiles then the user can proceed to the next stage only if the user has a threshold number of credits already earned through previous stages.

Fig. 2 illustrate example Graphical User Interfaces (GUIs) illustrating a sample starting and target geographic location. The GUI can be displayed on an output device associated with the electronic device.

The user selects “North beach” as the starting geographic location and “Bay Bridge” as the target geographic location in San Francisco. As shown in Fig. 2, the system provides a street view panorama of “North Beach” 206 and thumbnail image of “Bay Bridge” 204. Fig. 2 displays a user interface projectile 202 which can be used by the user for projecting a projectile towards the target geographic location 204. The system receives a first gesture to project the projectile 202. The system calculates the landing location and determines the trajectory based upon the

values associated with the gesture, e.g., direction, ground angle, and speed of the projected trajectory of the projectile, etc. The system fetches an animation or specific panoramas (to create the animation dynamically) from the server based upon the starting and landing geographic location. The system plays the animation while the projectile 202 is traveling towards the landing location. For example, the animation may show panoramas of places like Columbus Ave, Washington station, etc. for the user to learn the geographical layout of San Francisco. The system, based upon the calculations, lands the projectile 202 at the landing location. If the landing location is same as the target geographic location, the user is awarded maximum number of credits. However, if the landing location is not same as the target geographic location, then the system provides the user another chance till the predefined number of projectiles is used by the user.

Fig. 3 is a block diagram of an exemplary environment that shows components of a system for implementing the techniques described in this disclosure. The environment includes client devices 310, servers 330, and network 340. Network 340 connects client devices 310 to servers 330. Client device 310 is an electronic device. Client device 310 may be capable of requesting and receiving data/communications over network 340. Example client devices 310 are personal computers (e.g., laptops), mobile communication devices, (e.g. smartphones, tablet computing devices), set-top boxes, game-consoles, embedded systems, and other devices 310' that can send and receive data/communications over network 340. Client device 310 may execute an application, such as a web browser 312 or 314 or a native application 316. Web applications 313 and 315 may be displayed via a web browser 312 or 314. Server 330 may be a web server capable of sending, receiving and storing web pages 332. Web page(s) 332 may be stored on or



accessible via server 330. Web page(s) 332 may be associated with web application 313 or 315 and accessed using a web browser, e.g., 312. When accessed, webpage(s) 332 may be transmitted and displayed on a client device, e.g., 310 or 310'. Resources 318 and 318' are resources available to the client device 310 and/or applications thereon, or server(s) 330 and/or web page(s) accessible therefrom, respectively. Resources 318' may be, for example, memory or storage resources; a text, image, video, audio, JavaScript, CSS, or other file or object; or other relevant resources. Network 340 may be any network or combination of networks that can carry data communication.

The subject matter described in this disclosure can be implemented in software and/or hardware (for example, computers, circuits, or processors). The subject matter can be implemented on a single device or across multiple devices (for example, a client device and a server device). Devices implementing the subject matter can be connected through a wired and/or wireless network. Such devices can receive inputs from a user (for example, from a mouse, keyboard, or touchscreen) and produce an output to a user (for example, through a display). Specific examples disclosed are provided for illustrative purposes and do not limit the scope of the disclosure.

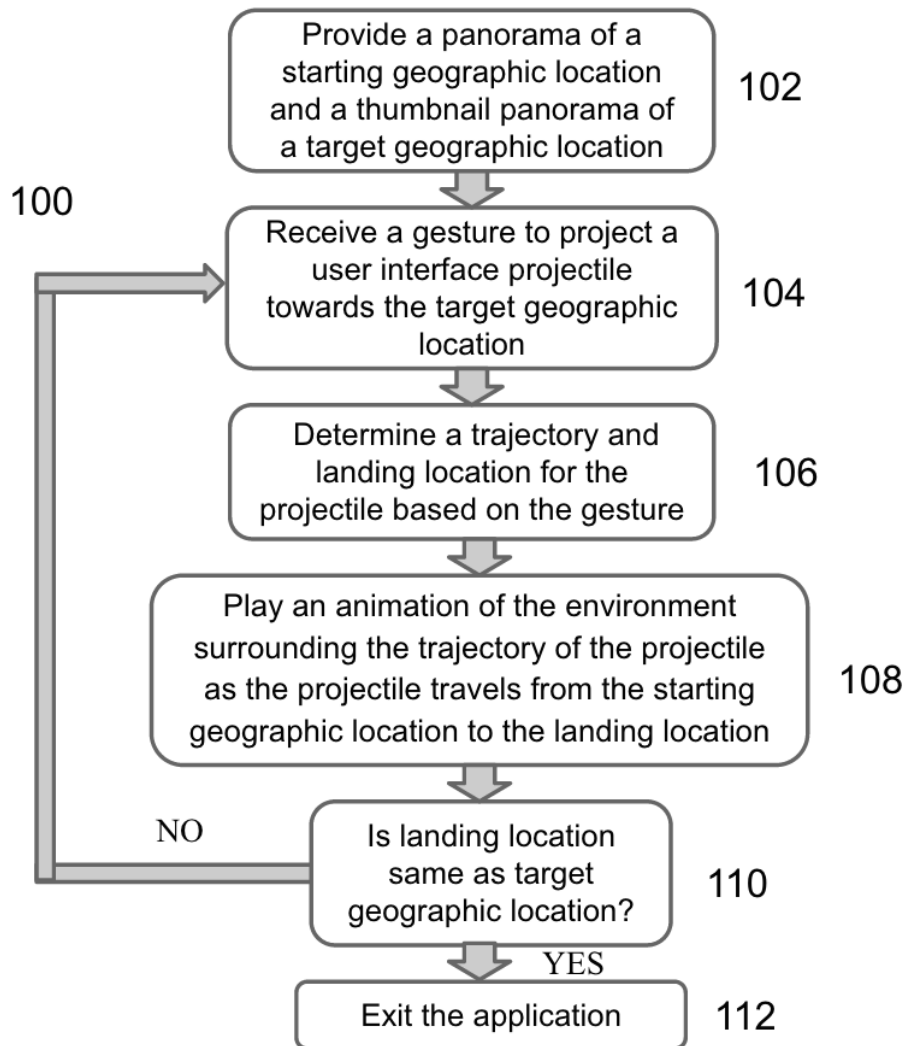
DRAWINGS

Fig. 1



Fig. 2

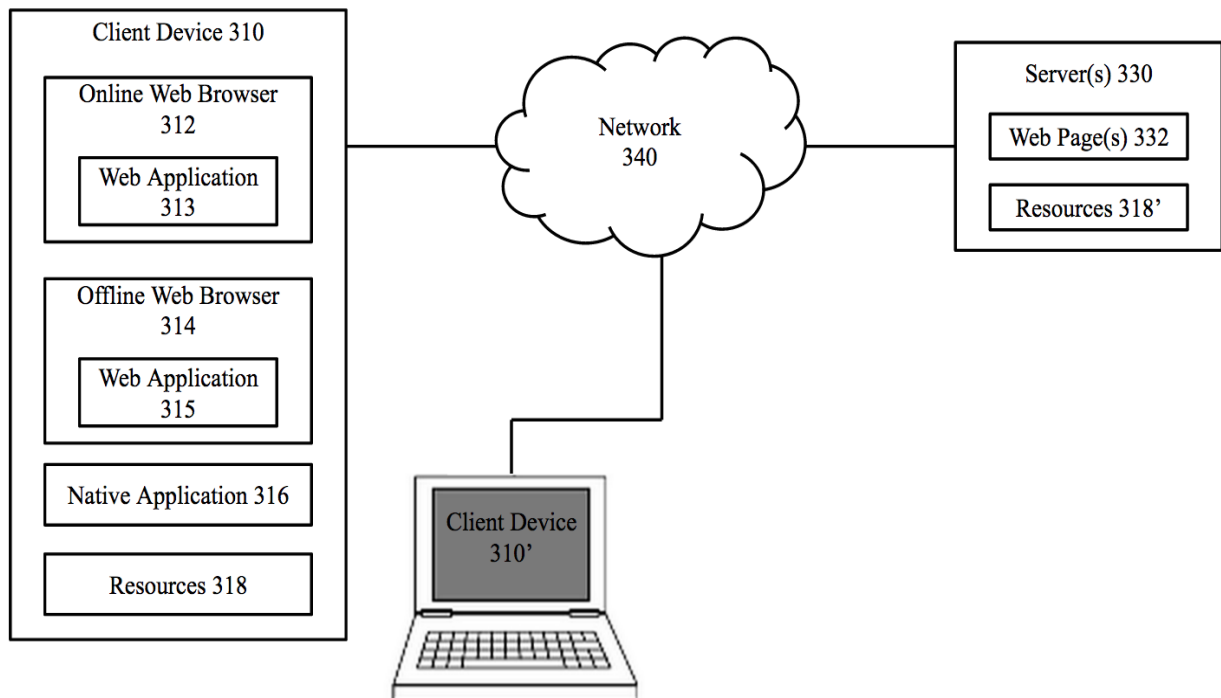


Fig. 3